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Digital Governance and the Digital Divide: A Matrix of the Poor's Vulnerabilities

Abstract

Although Internet penetration has reached 64.8% of the Indonesia population (APJII, 2019), the digital divide still remains a major issue for Indonesia, especially among the poor. This paper aimed to study and explain the risks of digital governance implementation in the poverty reduction policies, with the study on how the poor obtains and shares public information in the digital governance era as the focal point. This study was conducted in Magelang City, Central Java Province, in Indonesia, a city which has been awarded with the Smart City Award. The data was analyzed using descriptive statistics and a social network analysis. The study found that some of the impoverished populations are adapting to the digital governance with the help of the social network in their community; and yet, some of them are still digitally alienated. They have been at risk of becoming marginalized both socially and economically. This paper suggested further studies focusing on the information demand among the poor and the use of new communication technology in the poverty-reduction policy-making that is inclusive.

Keywords:

digital divide; governance 4.0; ICT gap; poverty reduction policy

Introduction

This article **builds on** the phenomenon of high Internet penetration and social media platform use in Indonesia. Information and Communication technology (ICT) development brings out logical consequence, the emergence of social change, from lifestyle to changes in

the societal order. **Problem statements** in this article are how far is the vulnerability risk of poor group related to digital divide in digital governance 4.0? What are the poor group's strategies to maintain "its informational life" to access poverty alleviation programs? The vulnerable risk intended

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is anything that has been or will be potentially encountered by poor groups in relation to the digital divide. The digital divide represents the gap between individual, household, business, and geographical area at different social-economic level related to their opportunity of accessing information and communication technology (ICT), and in the term of Internet use for various activities (Sparks, 2013). The approach used for analysis is information and communication technologies for development (ICT4D) models combined with a sustainable livelihood (SL) analysis to portray the vulnerability of poor populations in the research location in the digital government era. The basic premise of this paper is as follows: *Communication can effect developmental changes in societies, both reinforcing and attenuating (increasing the vulnerability risk).*

The theoretical objective of article is to map the forms of poverty risk to be faced by the poor group in relation to digital government development. **The novelty** of the article lies in the formulation of a poverty risk matrix resulting from poverty alleviation policies in government era 4.0 **using the ICT4D model**. The researchers call it novelty because it argues the mainstream proposition mentioning that the expansion of ICT penetration impacting on the improved welfare of society, thereby reducing the proportion of the poor population (Viodego, 2019).

The very rapid penetration of the Internet in Indonesia is represented in the results of the Indonesian Internet Service Provider Association's survey (APJII, 2019). About 171.17 million out of 264.14 Indonesian citizens, or 64.8% of the nation's population is Internet literate. The average duration of Internet use is eight hours per day, and that of social media is three hours per day, with 37% of social media use utilized for working purposes. Social media platforms belong to the four top uses of the Internet in Indonesia in 2019: YouTube (88%), WhatsApp (83%), Facebook (81%), Instagram (80%). During 2015-2017, the digital economic growth rate in Indonesia was close to 90%, the highest one in ASEAN countries, and the third number in Asia (CNNIndonesia.com, 2019; Kompas.com, 2019; Bisnis.com, 2019). Given the rapid increase in Internet penetration, it is not peculiar for the Indonesian Government to pass the Republic of Indonesia's Presidential Regulation Number 95 of 2018 about Electronic-Based Government System (SPBE) as the legal foundation of government implementation utilizing information and communication technology to give service to service-user citizens.

Previous literature studies on ICT use in governmental service or digital governance defines digital government as the platform for members of society to access governmental information

and service anywhere, anytime, and using any devices and encourages the public participation in decision making so that government is more accountable, transparent, and effective (Unesco, 2011; Björklund, 2016; Kelleher, 2017; Gil-Garciaa, Dawesa, Pardo, 2018). Digital government ascertains ICT use for communication, information, public service, and development governance (Sanders, Crespo, and Bacha, 2011, Wolfson & Funke, 2013). *Digital government* emphasizes public participation in collecting and utilizing Internet-based data and social networking applications to expand public service inclusiveness (Milakovich, 2014; Wolfson, Crowell, Reyes, & Bach, 2017; Johansson & Raunio, 2019).

On the other hand, ICT use to improve the quality of the poor's life is still controversial. A literature review survey conducted by Bahrini & Qaffas (2019) found that some areas in the world do not show a positive relationship between ICT diffusion and economic growth, but instead there is negative excess of it particularly in developing countries. Other studies have shown that the factors inhibiting the success is generally connected to human resource's preparedness and technology capital adequacy and public-policy strategies related to information technology use. Meanwhile, the factors supporting successful digital government and government and people's social network are government's transparency, public participation, Internet adequacy, and broad information understanding or literacy (Powell, Bryne & Dailey, 2010; Milakovich, 2014).

Although the use of Internet-based information technology has penetrated into public service area in Indonesia more broadly, however on the other hand 34.2% of population encounter digital divide (CNNIndonesia.com, 2019; Kompas.com, 2019; Skipper, 2019). Factors resulting in digital divide are: accessibility, bandwidth size, human resource competency quality, and willingness to use (May & Dhiga, 2015; Chetty et al., 2018). Digital divide potentially

results in new gap called *digital poverty* (Powell, Bryne, & Dailey, 2010; Flor, 2014; Desmod, 2015; Njoki & Wabwoba, 2015; Bach, 2018). Poverty needs multidimensional lens to study, including communication and information theoretical lenses. The poor group's limited access to information on social networks potentially marginalizes more that same group. Communication exchange theory assumes that people communicate with each other due to the presence of resources needed and searched for that can be fulfilled by certain people. Information communication media functions as a channel of exchanging needs between human beings and creating social capital. Media is "*The Extension of Man*".

The impact of ICT on the reduction of poverty still became controversial in previous studies, whether it has the direct positive impact or the risk of poor group marginalization. The impact of ICT on the reduction of poverty builds on the premise that a cause of poverty is the poor group's limited access to information, making them have inadequate opportunities of getting capital and improving other areas of life. The role of ICT in poverty alleviation is stated to be important and very desirable, but it should be supported with the appropriate policy with cross-sectoral and holistic approach (Harris, 2005). Inappropriate support from policy and proponent environment will reduce ICT's leveraging power for poverty alleviation. Previous studies conducted in Tanzania, Brazil, Chile, Colombia, Ecuador, and Peru during 2000-2013 found that ICT, in this case the computer, Internet, and cell phone, affects poverty positively. The positive impact occurs as a result of a series of attempts to improve the expansion of information access between the poor group becoming the business performers, thereby increasing income opportunity and reducing gap (May, Dutton and Munykazi, 2014; Yulmaz, et al., 2018). Another variable related to the role of ICT in reducing poverty is education level, age, and location of the village/city (Urean et al., 2016).

In other words, in certain groups with limited access to ICT, they instead experience the risk of marginalization and disadvantagedness in an attempt to reduce poverty.

ICT is useful in facilitating the government to involve the participation of stakeholders broadly in implementing the poverty alleviation policy if it is operated in an appropriate policy environment (Kelles-, 2003; Harris, 2005). Government disseminates all poverty alleviation policies easily, quickly, and transparently through social media, their website, and other technological applications. The government can easily receive complaints and reports on poverty aid program deviation within society. Government can also help connect or build the social network of many resource owners that can be synergized for dealing with the poverty issue in collective responsibility scope of government and other stakeholders. This facilitation is due to ICT's characteristics, including social media and website facilitating the communication network.

Considering the finding of variable contributing to ICT in order to be beneficial to the improvement of poor people's welfare as mentioned earlier, the normative role of government in the term of managing ICT's usefulness can be identified, including the government's social media account to improve the effectiveness of poverty management programs. The role of government is generally divided into two main domains: internal government and the external community, (1) to improve the governmental staffs' capability of communicating poverty policy through ICT media; (2) reducing the gap of Internet access to the poor community.

This article highlights the digital divide and digital poverty issues to map the poverty vulnerability risk and its implication to poverty alleviation policy in the digital era. The framework used is Information and Communication Technologies for Development (ICT4D) model combined with a sustainable livelihood (SL)

analysis to portray the vulnerability of the poor group in research sites in the digital government era. The ICT4D model was popularized by the International Institute for Communication and Development (ICD) as The Hague Framework (Flor, 2015). This model stems from the construct of "*Communication can effect developmental changes in societies.*" This construct builds on the following assumptions: (i) communication is a social process; (ii) communication is information exchange or knowledge sharing; (iii) the heart of ICT4D is social rather than technology. ICT4D refers to the application of Information and Communication Technology (ICT) toward social, economic, and political development, emphasizing specifically on helping people and poor and marginalized people. This research use the ICT4D Framework to develop a matrix which identify information used by the local government in the process of intervention to the poor people group.

ICT4D approach includes the role of government as communication agent to make change intervention. One of changes expected from ICT4D is the reinforcement of community's social network. Social network is reinforced with communication pattern between its communities, through social media network, (e.g. SMS, WhatsApp, WhatsApp Group, twitter, Facebook). The communication pattern performed by the government is a way of establishing relationships with people (members of society), exerting a long-term effect to build trust and support amongst its citizens. Communication is the government's important function to improve the three elements of governance principles: (i) effectiveness (building broad support and legitimacy for the program); (ii) responsiveness (recognizing citizen's need and responding to it), and (iii) accountability (explaining governments' accountability mechanism). So the good criteria of communication mechanism from government to the public can be seen from: (i) whether or not a system is available for providing the latest

information on public service; (ii) whether or not information is available on government-priority programs and projects; (iii) whether or not public space is available to express idea/opinion, consult, monitor, criticize and make an evaluation (Prabhakaran & Kalyani, 2014; Kozma & Vota, 2014; Rauchfleisch, 2017).

The ICT4D model recognizes the role of intermediaries as communication agents to bridge information that the group needs. A systematical literature review conducted by Bornbaum et al. (2015) on 22 studies about the role of knowledge brokers, or intermediaries, found some classifications of the role: (i) identifying the targeted group, collecting and connecting it to information source, either government or program/policy actor; (ii) facilitating collaboration between targeted group and other stakeholders; (iii) identifying and acquiring relevant information; (iv) facilitating the development of analytical ability and targeted group's skill; (v) translating information and knowledge according to the local context of targeted group; (vi) coordinating project/program; (vii) helping share information and communication between targeted groups; (viii) network development, maintenance and facilitation; (ix) facilitating and evaluating the change occurring; (x) supporting sustainability (Burt, Kilduff, & Tasselli, 2013; Landis, et al., 2018;).

The ICT4D approach is equipped with sustainable livelihood (SL) (Serrat, 2017) to analyze the poor people group's survival pattern to look for opportunity, reduce risk and vulnerability, and to maintain viability in the digital governance era. Vulnerability is characterized as insecurity in individual, household, and community welfare in dealing with the change in their external environment. SL variable used specifically in this article is a vulnerability and capacity analysis to develop social capital. In relation to the digital divide, does ICT use reinforce social capital to poor group? The SL approach in this article will

be used to answer the following question: what are the effects of digital governance use on access, opportunity, and benefit received by poor groups in relation to: (i) increased social network, job/business opportunity/improved working skill; (ii) information network obtaining vulnerability aid in education and health sectors. The reinforcement of social network to poor groups is important to dealing with vulnerability.

Social vulnerability should be anticipated before it evolves further into social exclusion. Since 1990, discussion on poverty is related to the term social exclusion as the limitation of people's participating ability duly in normal condition. Domain of social exclusion involves 9 areas: (i) job opportunity and income as well as economic resource, (ii) education; (iii) material resource and skill; (iv) health, (v) housing, (vi) social resource, (vii) community resource, (ix) personal safety (Bak & Larsen, 2015; Hoff & Walsh, 2018, Gallardo (2018).

Methods

This research took place in Magelang, one of the cities in the Central Java Province, Indonesia, getting award for Smart City in 2016-2018. The population of respondents was taken from one RT/neighborhood association unit with the largest poor family number representing individual sub districts in the city. The research was conducted to portray: (i) description of ICT implementation in city government; (ii) vulnerability risk of poor group related to digital divide in digital governance 4.0; (iii) poor group's strategy of maintaining "its informational life" to access poor alleviation program.

The subject of research was taken using the census method, collecting information from all citizens in three local community group caled "Rukun Tetangga" (RT) representing three subdistricts with 151 persons being the population of the sample of research. Data processing was conducted using a social network

analysis (SNA) to see the communication network occurring among RT citizens.

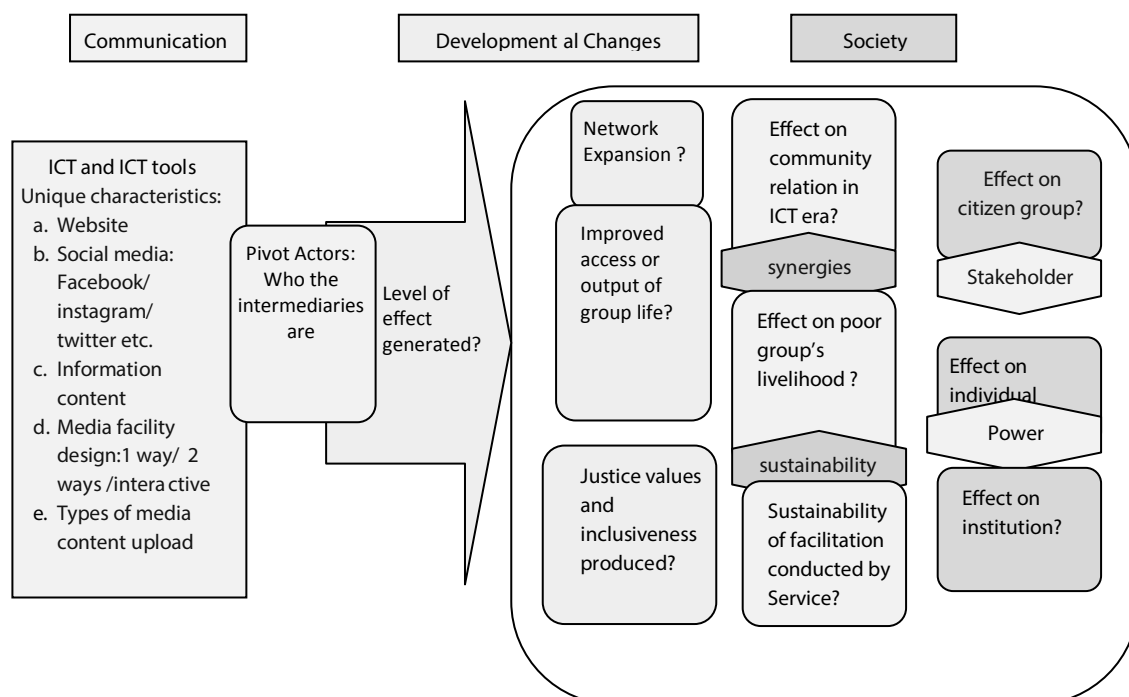
Data exploration was conducted using open ended questionnaire and deep interview. Questionnaire is equipped with interview to explore qualitative information. In addition to exploring data on connection network, questionnaire also contains some questions to find out the literacy rate of citizens and poor group over government's social media, thereby obtaining a description of the effectiveness coverage of digital government communication performed by city government.

The social network analysis is performed in this study based on the results of a questionnaire distributed to respondents belonging to poor group in the three poorest kelurahans (villages): kelurahan Wates, kelurahan Rejowinangun Utara, and kelurahan Rejowinangun Selatan in Magelang. The questionnaire was filled in using a guided self-administered method, in which the respondents filled in the questionnaire themselves with an

author's guidance. The data collected was then processed using Ucinet version 6.68 and the visualization of the social network occurring was made using the Netdraw version 2.16B program.

A social network analysis is used to explain who the source of information is and who asks for information in its community network in the attempt of seeing relation pattern and role of individual members of poor group in communication and information network in Neighborhood Association community. This analysis helps find the broker of information and its dynamic role by means of exploring it from follow-up interviews. The SNA in this study was intended to explain that government with its poverty policy and information dissemination media lives in community group network, either poor or non-poor. Whether or not the network will eventually develop and be effective is dependent on the strength of the inter-actor relationship highly affected by benefit and loss to be obtained by the actor in the network.

Figure 1.
Framework of ICT4D analysis for Poverty Alleviation Policy



Source: Adopted from *The Hague framework* (Flor, 2015) with some modification

Data regarding the application of digital government is explored using the content analysis method from OPD's (Regional Government Organization) website and social media accounts. This research was also equipped with a focus group discussion with governmental apparatuses for the triangulation of research results obtained and confirming the data interpretation made by the researcher. In addition, the presentation of analysis result was conducted using the information communication for development (ICT4D) model combined with sustainable livelihood (SL). The adopted ICT4D framework is illustrated in Figure 1.

Results and Discussion

This section is meant to address the research problem related to poor group's risk and strategy of developing informational life in the digital government era. This description follows the ICT4D model (Figure 1).

1. Description of ICT implementation in city government studied.

Before presenting the identification of potential vulnerability, the description of the research location is presented and related to the ICT development within community and public (government) service.

a. *ICT tools used*

The research took place in Magelang, Indonesia, a city awarded by the central government with the "Smart City for Small City" category from 2015-2018. Website-based ICT, digital service, and social media have been used for public service. Viewed from the government side, the governance of digital government infrastructure is shown with the preparedness of several organizations and infrastructure. ICT use leading to providing macro information includes, among others, as follows:

From the aforementioned data, it can be seen that the infrastructure of digital government 4.0 has been prepared.

Referring to the ICTD model, the effect of change and value carried on by the implementation of digital government is studied from various perspectives:

(i) Effect on poor group's livelihood

The effect on the impoverished livelihoods is admitted to be the greatest (47%), followed by the social relation effect (33%). Some forms of application affecting the improved quality of livelihood are, among others, Magelang Cerdas and e-sohib (Online Grant and Social Aid System). Strategic intervention impacting on the improved

Table 1.
List of e-Government Services in Magelang in 2019

No	Type of Service	Information
1	DataGo and Portal Open Data	To publish sectoral data
2	KISSME (Online Column for information on Community's Social Welfare)	containing information on poverty data and poverty programs.
3	Free Wi-Fi in public places	Providing Internet access to the public.
4	City government's official Facebook and Twitter Account	To communicate, to disseminate information, and to accommodate people's complaints (e.g. "Monggo Lapor" channel in Facebook).
5	Android-based digital (" <i>Magelang Cerdas</i> " application)	Integrating several services into one portal that has been in operation since 2018.
6	Fiber Optic (FO) network interconnection	has been established involving 29 OPDs, 14 out of 17 kelurahans, 19 puskesmas/health facilities, 2 culinary centers, 7 out of 13 Public Junior High Schools, and 7 public locations.

Source: Document of Regional Government's Work Plan for Magelang City in 2019

livelihood includes: providing *coworking space* for SMEs and business. Value carried on is the improved access to or output of community livelihood. Data from the City Communication and Information Office's Survey conducted on June 2019 shows that 12.3% of SMEs do their business online.

(ii) Effect on community relation

Internet penetration in this city is 54.41% and Whatsapp, social media, and Internet browser are used actively. From this survey, it can be seen that 1,000 poor households have cell phones, but the holders of cell phones are not the heads of poor families but their children, because the heads of the poor households cannot operate cell phones. Social network uses WA group of citizens at the Rukun Tetangga (RT) level is established for men only; there is no WA group for women. It means that this digital divide still occurs in the population with a large proportion of a poor family.

(iii) Effect on sustainability of facilitation performed by the Public Service Office.

Although the ICT infrastructure has been prepared, however, the management of public relation government still shows the gap inhibiting the effectiveness of digital governance function. The result of research showed that people's responses have not been designed to be feedback on the policy used to consider policy design, thereby still negatively impacting the sustainability of facilitation. The result of the interviews with Facebook's administration shows the constraints with optimizing the social media use strategy, namely information supply management and discussion moderation have not been specified yet to be the part of the Public Service Office's function and task, they serve as a side job only. Information content has not been planned in structured manner. This city has no social media account yet utilized specifically for poverty and community network issues to improve family welfare.

b. *Pivot actors as information and communication intermediaries*

Pivot actors of ICT utilization for development (ICT4D) in the location of research come from government and community. City government has website managing forum consisting of 29 OPDs. This forum has received training for developing website feature as communication and information media for public policy. In addition to the government actor, the role of communication and information intermediaries within the community is found in: (i) 21 Community Information Group (KIM) forums operating at kelurahan and sub district levels; (ii) FK Metra (Traditional Media Communication Forum) using traditional media like *wayang kulit* (leather puppet), and other art and cultural communication forums; (iii) communities teaching the people how to run online business and to use social media or networking need: Kampung Blogger (Blogger Hamlet), called the information technology hamlet in Kelurahan Kedungsari of Magelang Utara or North Magelang.

In the period of May 2018 to May 2019, out of all the users of the city government's official Facebook account, 46 were women (23%) and 160 were men (77%), but out of the 206 reports only 8 were in poverty (38%). The male group (26%) communicates using government's official social media more actively than the female one (13%). Considering the aforementioned theoretical, ICT contributes to the poverty reduction when it is operated alongside the appropriate policy; therefore social media is expected to be used to improve the opportunity of reducing poverty. The more the poverty issue is discussed in the city government's social media account, the more the problem and source of poverty alleviation can be explored and coordinated as the input of city government's policy. The results of a content analysis on social media used by the city government shows that the poverty issue discussed through social media is still very

limited. Consequently, only few information on the policy for poor people and social resource for poverty alleviation is disseminated broadly to the community. For example, Magelang's government's Facebook account can actually mention the account of companies existing in Magelang that can provide CSR (Corporate Social Responsibility) to address the issue related to the need for information technology training for poor family in digital economic era, to increase the job opportunity and income for poor people.

Although the government has operated some features of digital government and there have been communities developing their IT community, this study finds that information on poverty alleviation policy has not been accessible inclusively to the poor group. Information on poverty and poverty alleviation policy has not been presented in the special directory. There has been no special group in all online media types discussing poverty issues specifically.

The result of data processing using SNA from this research population shows that 5% of citizens play intermediary roles; those treated to be informational references by their community. The strategic roles played by information broker in this study are: (i) answering citizen's question; (ii) receiving citizen's report and complaint; (iii) connecting the government to citizens to deliver information; (iv) reporting data to government if there is poverty grant. Information on poverty policy often needed by citizens, according to respondents, relates to: (1) type of poverty grant (aid) (94%), (2) requirement of grant and how to deal with it (70%), (3) reporting fraud or deviation problems related to poverty grant (485), and (5) other information (26%).

Viewed from the respondents' profiles, those considered as an informational reference by the community have several similar characteristics: (i) having an Internet-based cell phone; (ii) knowing city government's social media; (iii) aged 40-50 years; (iv) being close to governmental

structure, e.g.: Head of RT, Civil Servant; (v) having permanent job. This data shows that the status of closeness to government still becomes added value to an individual trusted by his/her community, thereby becoming the source of information to community. This data shows that elite domination and centralization still occurs even in government era 4.0.

2. *How vulnerable is the poor group related to the risks of digital divide?*

a. Poor community's digital access to government's website-and social media-based information is still low

As aforementioned, ICT affects the reduction of poverty when the constraint with the access to information technology in digital era can be solved (Harris, 2005; Powell., Bryne, & Dailey, 2010; Flor, 2014; May, Dutton and Munykazi, 2014; Desmod, 2015; Njoki & Wabwoba, 2015; Urean et al., 2016; Bach, 2018; Yulmaz et al., 2018). The utilization of social media and website to improve the condition of poor people may result from the attempt of building the relation in online sale frame, and looking for information on job training, on job vacancy, and on poverty aid, and similar.

Information Communication and Statistics Office published in 2019 that the city has the largest number of poor people, 9,590 (7.87%) with poverty line of IDR 476.582. Out of population studied, 42% of respondents have Internet-based cell phone. It includes the owner of identification social media accounts: (i) Facebook (26%); (ii) Instagram (16%); and (iii) Twitter (0.01%). Respondents' acquaintance with government's social media and website accounts is: (i) FB (15%), (ii) website (5%); (iii) Instagram (8%); and (iv) Twitter (1%). About 26% of respondents know the government's Internet-based information and communication media.

Digital divide encountered by research population is viewed from the following aspects: (i) cell phone ownership (62% having and 38%

not having); (ii) ownership of phone or ICT connected to Internet (42% having and 58% not having); (iii) ability of operating Internet-based phone or ICT media (32% able, and 68% with family's help to operate Internet); (iv) ability of paying or accessing Internet (42% able and 58% unable to pay).

b. Literacy rate of poor group in disseminating Internet- and new media-based information on public policy is still low

Out of 63% respondents admitting knowing city government's social media and website, only 13% state having commented on or posted information in government's social media. This data indicates that people's response is not too high. Why? It is putatively due to digital divide factor, in which only 42% of respondents have Internet-based cell phone. In addition, it is also because government communication pattern has not utilized actor network optimally yet for public information literacy in poor people group.

Negative effect of digital divide is that it widens the access, opportunity, and advantage gaps between groups. To those incapable of accessing and utilizing technology, she has a greater opportunity of accessing information and greater opportunity of establishing social economic network. Meanwhile, the digital ware-illiterate group is increasingly left behind and dependent on information broker in their environment.

c. Vulnerability

Vulnerability is exposure to risk, powerlessness, and feeling of insecure. As such, poverty vulnerability means that a certain group or community has greater potential to be poor or to remain poor in the coming years (Gallardo, 2018). Vulnerability to poverty related to the digital divide means connecting poor groups to ICT-based poverty information services.

In-depth interviews with intermediaries explain that the information asked for by citizens

is not fully accessible in the government's website or social media accounts, so citizens need to go to the Kelurahan government to get answers. This means that information available in government's social media and website has not yet fulfilled the citizens' needs, thereby contributing to the community's low literacy on poverty policy information in the digital governance era.

The result of data processing using SNA on the research population shows that the digital divide impacts on the accessibility of poverty information by lowering it overall. This access gap for poor communities to learn of poverty policy information is indicated with the low proportion of new media use as communication media and information access: (i) WA Group (10%), City Government's FB (5%), (iii) City Government's IG (5%), (iv) City Government's website, (v) Government-owned Twitter account (1%).

Meanwhile, the result of in-depth interviews with impoverished persons showed that the information needed according to respondents relates to: (1) types of poverty aid (94%), (2) requirement of aid or grants, and how to deal with poverty grants (48%), and (4) other information (26%). Type of poverty aid expected: (i) health aid (76%); (3) business capital aid (74%); (iii) job training (66%); (v) housing aid (65%); and (v) education aid (61%).

The information gives a description of vulnerability risk encountered by poor groups related to the digital divide in accessing information on poverty policy including: (i) vulnerability to decreased opportunity of getting job; (ii) vulnerability to decreased opportunity of developing business capital; (iii) vulnerability to decreased opportunity of developing working skill; (iv) vulnerability to decreased opportunity of getting health, education, and housing aid. In relation to the ICT4D model, the poor group in the digital government era is at risk of remaining to be in a marginalized position and not having strong

enough social capital. It is difficult to improve earnings power and job productivity.

3. What is the poor population's strategy of maintaining its "informational life" to access poverty alleviation programs? This discussion is related to the attempt of preventing vulnerability risk, the less advantageous condition of poor group due to the effect of ICT implementation on government administrations.

Viewed from the social network pattern in the poor community of this city, the informational life strategy is to rely on face-to-face encounter pattern. Communication channels most frequently accessed to acquire information on government policy related directly to their need, including poverty policy are: (i) RT meeting (57%), (ii) conversation with neighbor (56%), (iii) religious forum meeting (34%), (iv) social forum meeting (28%), (v) conversation with friends (21%), (vi) written announcement, poster, billboard (20%), and (vii) newspaper (10%).

The informational life pattern of research population is as follows: (i) citizen groups viewed as information sources by the community (5%

of total population); (ii) citizens undertaking information exchange with low frequency (30%); (iii) citizen undertaking high information exchange (5%); (iv) group with one-way communication as the seeker of information (26%); (v) group not connected to its community (23%). The group is not connected, meaning that they never ask for or report on information about public policy in their community, including poverty policy. They are never asked for or never receive reports on any case from their neighbor related to the unclear enactment of government (public) policy in the community. They have some similar characteristics: (i) they do not a cell phone or an Internet-based cell phone, (ii) they are not local people, (iii) their are more than 55 years old.

The results of this research shows some very strategic roles played by intermediaries: (i) answering citizen's question; (ii) receiving citizen's report or complaint; (iii) connecting government to citizens to deliver information; (iv) reporting data to government when there is poverty grant. In addition to the positive effect, the power of an intermediary's role is also at risk of perpetuating a patron-client relation. This assumption builds on the characteristics

Table 2.
Matrix of Poor Group's Vulnerability in Digital Governance Era

Vulnerability	Risk	Surviving Strategy	Recommendation
1. The digital divide results in low proportions of new media use as communication media and access to information, thereby impacting the lack of access to information on poverty alleviation policy	1. potentially being left behind in the terms of: a. job opportunity; b. opportunity of getting business capital grant c. Opportunity of developing working skill	Informational life strategy of poor strategy includes: 1. Dependent on the role of intermediaries (neighbor, friend, community leader)	1. City government should develop a collaboration with business performers through Corporate Social Responsibility (CSR) and the IT community to expand the digital literacy of poor persons;
2. Dependency on information intermediaries or information broker perpetuates the patron-client relation	2. Potentially kept weak in terms of social capital	2. Being dependent on community meeting forum	2. Government's Internet-based information media should be developed in order to be more inclusive, thereby reducing the risk of dependency on intermediaries or information brokers

Source: obtained from primary data

of an intermediary as the group of people with excessive power, close to government, and higher social-economic status. The matrix of the poor group's vulnerability in digital governance era is represented in Table 2.

Conclusion

From the results of the analysis, some conclusions can be drawn to the research problem referring to ICT4D: the effect of ICT on a network expansion, the poor group's improved access to productivity, and the effect of facilitation sustainability institutions operated by the city government.

The conclusion of the matrix of the poor group's vulnerability in the digital governance era is as follows: *First*, the poor group encounters a digital divide to respond to the government communication using ICT. The implication is that the government should anticipate a digital divide of the poor group through collaboration with the CSR of a business realm, the IT community, and Kampung blogger. *Second*, the literacy rate of the poor group in disseminating Internet and new media-based information on public policy is still low. The implication is that the city government should improve the poor group's literacy through a family member or network community closest to a poor family; for example, the RT community, job community, religious community, and other social communities. *Third*, the key component playing a role in interpreting information among poor groups is the information broker. The role of an information broker is still very desirable in the government era 4.0. Government's Internet-based information media should be developed in order to be more inclusive. The management of the city government's official social media accounts should be redesigned using egalitarian diction choice, rather than bureaucratic language or technocratic terms understood only by bureaucratic professionals or academics. Issue posting should be activated with online discussion

moderation. The result of online discussion should be processed as primary data as public feedback on local poverty issues.

The theoretical contribution of research is the finding of a proposition that ICT needs government apparatuses with pro-poor sensitivity to deal with poverty, so that it is concerned with poverty issues and poor people's vulnerability. Pro poor sensitivity will result in apparatuses responsive to the poor group's limited ability of accessing digital-based public service. The second proposition contributed by this article is that digital divide potentially institutionalizes patron-client relation for the poor group. The third proposition is that digital divide potentially makes the poor group marginalized in the terms of accessing, participating in, controlling, and benefiting from development.

Considering the result of this study, some recommendations are given to policy practitioners. *First*, the one admitted by its community to be the information broker should be coordinated in a forum, for instance, a Community Information Group Facilitator. *Second*, the government should map real information needed by the community and package it into language that is easily understandable to the community. *Third*, the city government should reinforce the professionalism of apparatuses in charge of managing social media accounts and websites with poverty information. The function of the organizer of the government's website and social media is as the facilitator of citizen discussion, and to maintain the intensity of communication with the information broker group. Online communication and discussion forums should be followed up with data processing and feedback analyses on the communication network. *Finally*, the government should provide a coworking place in a strategic public area equipped with Internet access and devices to help shorten the digital divide amongst the poor.

The recommendation given for further research is to conduct a study on poverty issues in

social media accounts operated by the government and community groups using a mining database from social media platforms.

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